

# SSR1 Fabrication status at IUAC

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# Overview

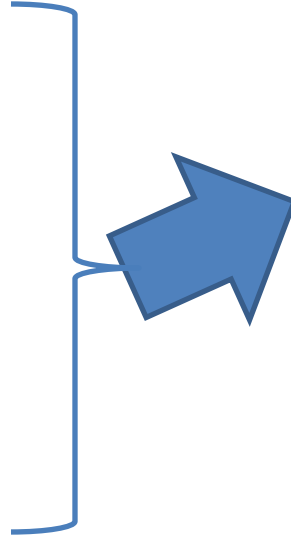
➤ The Story so Far...

➤ What's next

➤ Limitations

# The Story so Far...

- ❖ EB welding of coupler ports to the two SSR shells completed.
  - A non trivial weld due to inaccessibility of the weld joint from the outside because of design changes in the coupler port.
  - Special fixture had to be made to hold the shell in a tilted position to do the welding from inside.
  - Space constraints from the size of the EB machine vacuum chamber.

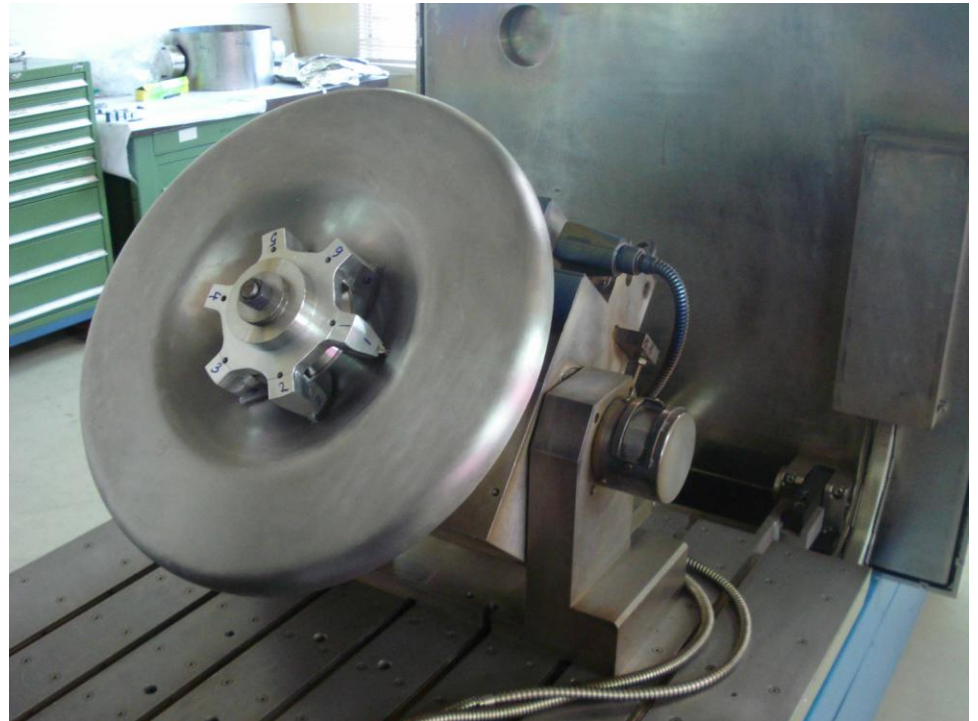


# The Story so Far...

## ❖ Daisy Rib welding.

- All twenty four daisy ribs have been tack welded to the four End Walls.

- A total of  $4 \times 6$  welds per End Wall  $\times$  4 End Walls =  
96 total tack welds  
done in eight settings



# The Story so Far...

## ❖ Donut Rib welding.

- Two Donut Ribs have been welded to two End walls. A third one is presently in the process of being welded.

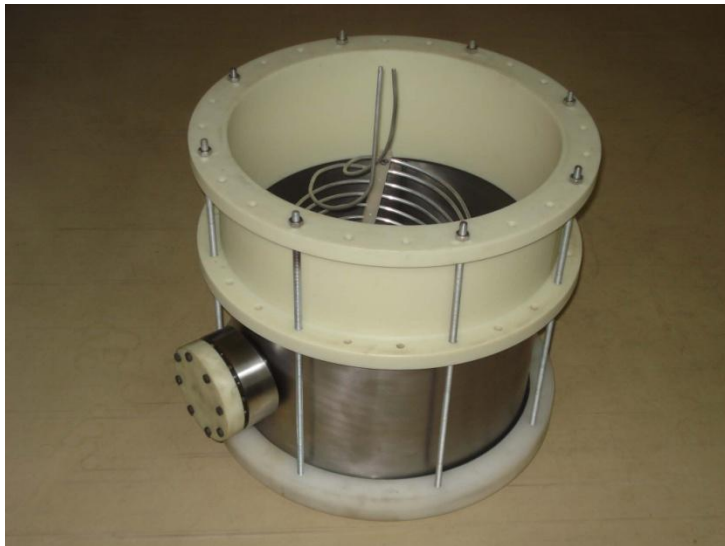
A total of 40 welds per End Wall  $\times$  4 End Walls =  
160 total welds have to be done.  
Each End Wall needs 4 settings.



# The Story so Far...

## ❖ Electropolishing (EP) of the SSR parts.

- EP fixtures and all associated paraphernalia (aluminum cathode, secondary containers etc.) are ready for the EP of the two Shells and the four End Walls
- Sufficient quantity of acids have already been procured for the EP of all the resonator parts



# What's Next

- ❖ Spoke to Shell Collar fabrication and welding.
  - Forming trials are underway at the vendor's site and die punch set would be finalized soon.
- ❖ EP of the two spokes
  - Fixtures will be made once the Spoke to Shell Collar is welded.
- ❖ Shell to Spoke welding
  - Weld parameter development for the critical saddle weld will be started shortly.
- ❖ Tuning of the cavity at room temperature and 1 atm.
- ❖ Shell to End Wall welding.



# Limitations

## ❖ Repeated breakdown of the Electron Beam Welding machine.

- Control PC breakdown( June 2<sup>nd</sup> week) → Fixed  
• → Machine was up for ~ 7-8 days
- CPU card breakdown → Machine down for ~ 2½ months  
→ Problem is partially resolved by replacing the malfunctioning card
- We are still awaiting for a card in the PC although the EB Machine can be run with some difficulty.
- Gun oil problem. This issue is being resolved through the machine manufacturer.

Total Time lost ~ 3months

Thank you !!